APPENDIX H.

Complete Chronological Cultural History

Complete Chronological Cultural History for the SFPP East Line Expansion Project El Paso to Phoenix

Since the current project crosses a vast extent of the southern Southwest, the project area includes evidence of many cultures. Archaeologists have devised various frameworks to address culture history in the region. There are similarities across the region in the Paleoindian and Archaic period, but later prehistory exhibits greater variability. It is therefore necessary to discuss the Archaic and later periods in a more detailed way for the sub-regions of this project.

1.1 Paleoindian Period (10,000–6000 BC) Texas New Mexico and Arizona

During the Paleoindian period, the local climate was cooler and moister than today, with somewhat more lush vegetation and a smattering of now-evaporated lakes. Under these less arid conditions, the environment of the southern Southwest was not a harsh as it is today. Now-extinct Pleistocene megafauna inhabited the area and were game for Paleoindian hunters. Low population densities prevailed among the early inhabitants of the region, and they were apparently organized as small-scale, mobile, and socially fluid groups. These conditions worked to homogenize projectile point styles and other cultural marker traits over vast areas.

Clovis Complex (ca. 9500–9000 BC). The distinctive marker of the Clovis complex is the fluted lanceolate projectile point, first identified in eastern New Mexico. Patterns of Clovis sites indicate low population densities, with small-scale and dispersed, highly mobile bands that inhabited large home ranges, trading and interacting extensively with other groups. Clovis materials may represent an adaptation to "high-diversity environments south of the maximum extent of the Wisconsin glaciation…primarily in mountain settings" (Bronitsky and Merritt, 1986:73). Several isolated Clovis points have been found in southern New Mexico (Huckell, 1972). Clovis culture is also relatively well documented in southeastern Arizona. In Cochise County, Clovis artifacts have been found in primary contexts at several sites in the upper San Pedro Valley, and isolated Clovis projectile points have been recovered from other locations in the region.

Folsom Complex (ca. 9000–8000 BC). The Clovis complex was followed by the Folsom complex (ca. 9000–8000 BC), which is also named for a distinctive fluted projectile point, first identified in northeastern New Mexico (Wheat, 1972). Following the extinction of mammoths, a relatively homogeneous Pleistocene environment in western North America evolved into different environments characterized by distinct floral and faunal assemblages. Most archaeological evidence supports the view that Folsom people were primarily bison hunters (Amick, 1994; Figgins, 1927; Judge, 1973; Staley and Turnbow, 1995). Folsom sites include isolated projectile points, small kill sites, butchering stations, and other modest site types (Krone, 1975). Several sites have been recorded in the desert lowlands along the shorelines of ancient lakes or modern playas (Beckes et al., 1977; Peter and Mbutu, 1993;

Zeidler et al, 1996). Other locations include caves, canyons, and foothills that may have been base camps (Carmichael, 1986). In southwestern New Mexico, Folsom material is well represented in the Tularosa Basin, to the east and north of El Paso and the Franklin and Organ Mountains (Amick, 1994; Beckett, 1983; Carmichael, 1986).

Plano Complex (ca. 8000–6000 BC). Evidence of increasingly drier conditions appears around 10,000 years ago (Judge and Dawson, 1972; Peter and Mbutu, 1993). Adaptive changes to this more xeric environment area associated with the emergence of the Plano complex (8000–6000 BC). Adaptive changes to this more xeric environment are associated with the emergence of the Plano complex. Plano sites tended to be located in areas with relatively easy access to increasingly restricted water sources. Communal hunting techniques were employed and focused primarily on bison (Carmichael, 1983, 1986; Cordell, 1997; Wheat, 1972). Technologically, projectile points were laterally thinned (e.g., Midland and Plainview), basally constricted (e.g., Agate basin and Hell Gap), and basally indented (e.g., Firstview and Cody).

1.2 Archaic Period in Texas (6000 BC-AD 200)

The Archaic period in Texas may be divided into four phases and include Gardner Springs (6000 BC to 4300 BC); Keystone (4300 BC to 2600 BC); Fresnal (2600 BC to 900 BC), and Hueco (900 BC to AD 200) (MacNeish, 1993).

Gardner Springs Phase (6000-4300 BC). The Gardner Springs phase, is the least understood of the four Archaic stages. Jay, Abasolo, and Bajada projectile point styles are identified with this early assemblage (Anderson, 1987; Beckett and MacNeish, 1994). MacNeish (1993) also included end scrapers, flake gravers, denticulates, prismatic blades, choppers, mullers, pebble cleavers, milling stones, and pestles in the assemblage. Preliminary settlement pattern data suggest small bands exploited a variety of microenvironmental zones in the late spring and early summer as seasonal resources became available. During the fall, small groups would also use a variety of habitats including riverine, basin floors, and mountain terrains. Winter sites tended to be associated with basin floor playas. Because acorns and pinyon nuts could be stored in the winter, some sites tended to be in higher elevations in the fall (Beckett and MacNeish, 1994; MacNeish, 1993). Consequently, it is possible that mountain rock shelters were occupied during the fall and winter.

Keystone Phase (4300-2600 BC). Settlement patterns remained fairly static throughout the Gardner Spring phase and into the subsequent Keystone phase. Winter sites are found on the basin floors and along the river, and a variety of habitats were exploited the remainder of the year. For example, the Keystone Dam Site contains a structure tentatively dated to the latter part of this phase and may reflect a winter occupation (O'Laughlin, 1980). The presence of habitation units may indicate an increase in population, social stress, climatic changes, or a combination of these influences. The Keystone phase is associated with projectile point styles such as Bat Cave, Pelona, Shumla, Gypsum-Almagre, Amargosa, and Todsen.

Fresnal Phase (2600-900 BC). More archeological data are available for the Fresnal phase than the previous two phases. During this phase, settlement patterns shifted from a seasonal to a semi base camp strategy. Short-term or specialized task groups exploited a variety of resources from a central base camp (Binford, 1980). The earliest radiocarbon dates on corn for the region indicate that cultigens had been introduced by the Fresnal phase (Tagg, 1996).

The large number of identified Fresnal phase sites suggests a significant population increase. The projectile points affiliated with this phase include Fresnal, San Jose, Todsen, Augustin, and Chiricahua (Beckett and MacNeish, 1994; MacNeish, 1993).

Hueco Phase (900 BC-AD 200). The succeeding Hueco phase population may have utilized an increasingly mixed economy. Seasonal, short-term base camps appear to be associated with specialized task groups exploiting a variety of habitats. The addition of squash and beans to the list of documented cultigens implies expanding horticultural pursuits and may reflect a shift towards more semi permanent occupations. In addition, large numbers of Hueco sites, found in a variety of habitats, indicate expanded land-use patterns. Projectile point styles identified with this Late Archaic phase include Hueco, San Pedro, Armijo, and Hatch (Beckett and MacNeish, 1994). The Hueco phase people may have set the foundation for strategies employed by later Mesilla phase groups.

1.3 Archaic Period in New Mexico (6000 BC–AD 200)

The presence of distinct projectile point styles and the absence of ceramic technology define the Archaic period in New Mexico. The Archaic period in southwestern New Mexico is the Cochise tradition (Huckell, 1996; Irwin-Williams, 1979; Sayles and Antevs, 1941). The Cochise tradition is subdivided into Sulphur Spring phase (6000–3500 BC), Chiricahua (3500-1500 BC), San Pedro (1200–800 BC) and Cienega (800 BC–AD 200).

Sulphur Spring Phase (ca. 6000–3500 BC). The Sulphur Spring phase was identified at sites along Whitewater Draw and Wilcox Playa in the Sulphur Spring Valley of southeastern Arizona. This phase is marked archaeologically by simple ground stone milling tools (e.g., grinding slabs) and crudely flaked stone tools, with a distinctive lack of projectile points (Waters, 1998).

Chiricahua Phase (3500–1500 BC). Dating of the Chiricahua phase is problematic, and is well known only from about 3500 BC; Whalen dates the phase to 3500–1500 BC (Whalen, 1971). An increasing variety of mano forms, crude flaked stone tools, and projectile points mark the Chiricahua phase. Among the projectile points associated with this phase are side-notched points that have been called Chiricahua points (Huckell, 1996). Sites are generally small, with low densities of artifacts and features. Maize remains appear in the archaeological record by 2000 BC, but archaeologists generally assume that maize contributed little to the diet (Wills, 1988).

San Pedro Phase (1200–800 BC). The San Pedro phase is marked by the appearance of large sites with substantial midden deposits, abundant artifacts, fire-cracked rock, storage pits, and shallow pit structures. An increased frequency of projectile points has been observed for this period. The most common of these point types is the San Pedro, which typically exhibits broad, lateral notching. Archaeologists have long known that maize was present in this period, with early discoveries at sites such as Ventana Cave and Bat Cave. As is the case with the preceding Chiricahua phase, however, archaeologists have long assumed that cultivation of maize was a minor activity within a subsistence economy still dominated by hunting and gathering.

Cienega Phase (800 BC–AD200). Huckell (1995) identified the Cienega phase in southeastern Arizona. It is marked by flaked stone similar to that of the San Pedro phase, except for the presence of distinctive, diagonally corner-notched points. This point type is named

Cienega, and is considered the diagnostic lithic element of the Cienega phase. Ground stone includes large perforated stone rings whose function is not known. Structures are round and do not contain bell-shaped pits. Maize, possibly squash, and native plant remains have been recovered from sites of this period (Huckell, 1996).

Introduction of Agriculture in the Late Archaic. Investigating sites with substantial midden deposits and pit structures, Huckell's team routinely collected and processed flotation and pollen samples, and they found that maize remains were both abundant and ubiquitous in these sites. Apparently, the Late Archaic inhabitants were investing considerable energy in maize farming, although hunting and gathering remained important. Moreover, the substantial midden deposits at the site, along with the presence of pit structures, indicated a significant residential commitment to these sites, with at least semi-sedentary occupations.

Huckell's findings present a picture of the Late Archaic period that differs from what had been assumed, and Huckell proposes that the period 1500 BC–AD 200 be re-defined as the "Early Agricultural period" rather than Late Archaic. Yet, it remains unclear to what extent intensive maize farming, as documented at the Cienega Valley sites, may characterize this time across the region. Huckell himself acknowledged this issue and questioned whether intensive maize agriculture was a generalized economic pattern at this time or was restricted to more favorable environments, such as the alluvial bottoms of the Cienega Valley.

1.4 Archaic Period in Arizona (7500/6900 BC–AD 1/600)

The Archaic period in Arizona is characterized as a time of increasing sophistication in hunting and gathering techniques through both technological development and the evolution of ever more complex subsistence-settlement systems, in conjunction with a gradually increasing dependence upon native plants as a food resource. A transition to a partial reliance on agriculture accompanied population growth and the development of more sedentary settlement patterns. Archaic occupation of southern Arizona has been associated with two broad traditions: the Cochise culture and the Amargosa complex. The former was first defined by Sayles and Antevs (1941; Sayles, 1983) in the San Pedro, Sulphur Springs, and San Simon valleys. Within this tradition, three successive phases were recognized: Sulphur Springs, Chiricahua, and San Pedro. The Amargosa tradition was initially identified in the Mojave Desert of California and adjacent parts of the Great Basin (Haury, 1950; Hayden, 1970, 1976; Rogers, 1966). The Cochise culture corresponds to the Southern cultural tradition of the Archaic as defined by Irwin-Williams (1979), whereas the Amargosa Complex corresponds to her Western tradition (Huckell, 1984).

Since the mid-1980s, a simpler chronological taxonomy—Early, Middle, and Late Archaic—has been widely used (Huckell, 1995). In Huckell's (1996) chronology, the Early Archaic dates from ca. 7500/6900-4300 BC, although radiocarbon dates (Haynes, 1982; Huckell and Haynes, 1995; Waters, 1986) "indicate that the Archaic may have begun earlier in southern Arizona, overlapping with Paleoindian complexes in the early Holocene" (Mabry, 1998:10). Huckell (1996) dates the Middle Archaic from ca. 4300 to 1800 BC. For the succeeding period, from ca. 1800 to AD 1/600, he differentiates between Late Archaic populations that maintained a hunting and gathering lifeway and Early Agricultural populations. In southern Arizona, maize was introduced from Mesoamerica ca. 1700 BC, followed by squash (ca. 1000 BC) and beans (ca. 600 BC) (Mabry, 1998). Wild floral resources, as well as game, continued to be major components of subsistence (Huckell and Huckell 1984; Huckell

et al. 1994). Within the Early Agricultural period, two phases have been recognized: the San Pedro (ca. 1200-800 BC) and the Cienega (ca. 800 BC-AD 200) (Huckell, 1995).

1.5 Jornada Mogollon (Formative Period [A.D 200–1450]) New Mexico and Texas

The Southern Mogollon tradition is found in the project area in New Mexico from around Deming to the Arizona-New Mexico state line (Lehmer, 1948). Around Deming the Mogollon tradition is Jornada. Below is both the Jornada and followed by the Southern Mogollon.

The Jornada Mogollon is marked by the presence of ceramics and locally, has been divided into three Phases, Mesilla, Doña Ana, and El Paso (Lehmer, 1948). The adoption of ceramics played a major role in gradually increasing sedentism and the use of cultigens by providing a secure means of storing cached foodstuffs. In the archaeological record, the sedentary, or perhaps more appropriately, semi sedentary, Formative period adaptation is reflected by villages that frequently include comparably large, communal/socio-religious structures (Whalen, 1994; Wiseman, 2002). The more mobile aspects of Formative period subsistence practices are represented by artifact scatters that predominantly include thermal features and are inferred to reflect foraging and/or logistical subsistence activities.

Mesilla Phase (AD 200-1100). The Mesilla phase (AD 200 to 1100) appears to represent a continuation of the Hueco phase subsistence pattern, with the addition of undecorated brownware ceramics referred to as El Paso Brown (Whalen, 1994). Brush huts and pit structures comprise the documented habitation structure types, and large pit structures suspected to have served communal functions typically occur on more intensively occupied sites. Subsistence evidently remained focused on hunting and gathering, with horticultural activities constituting a secondary resource (Carmichael, 1981, 1985, 1990; Hard, 1983). The most readily detectable changes in ceramic assemblages associated with the late Mesilla phase include a decrease in brownware jar rim taper along with the addition of Mimbres Black-on-white and occasionally, San Francisco Red Ware types.

Doña Ana Phase (AD 1100-1200). The Doña Ana phase began around AD 1100 and continued until about AD 1200. Rectangular pit structures become common during the Doña Ana phase, although Lehmer's (1948) excavations at Los Tules suggest that similar examples may have been present during the late Mesilla phase. Paint decorations become prominent on the local brownware, resulting in assemblages dominated by El Paso Bichrome and El Paso Polychrome. In addition Mimbres Black-on-white ceramic types, Chupadero Black-on-white, Three Rivers Red-on-terracotta, and St. Johns Polychrome are added to the list of intrusive ceramics. The use of cultigens continues to increase during the Doña Ana phase, but groups probably continued to employ several land-use strategies.

El Paso Phase (AD 1200-1450). The El Paso phase (AD 1200 to 1450) represents the culmination of the Formative period in the Jornada culture region and includes evidence for several large aggregated population centers near permanent water sources (Bentley, 1993; Lehmer, 1948; Lekson and Rorex, 1987; Sale and Laumbach, 1989). In the Hueco Bolson and Tularosa Basin, architecture during the El Paso phase is exemplified by linear, contiguous puddled adobe pueblo room blocks. Although a few large plaza-style pueblos have been reported, most of the pueblos include less than 20 rooms (Moore, 1996). El Paso phase adobe field houses, as well as both round and rectangular pit structures are also reported (Browning et al., 1992; Hedrick,

1967; Moore, 1996). Along the western foothills of the San Andres Mountains, however, cobble foundation alignments and upright slab foundations or cimientos have been documented on sites attributed to the El Paso phase (Lekson and Rorex, 1987).

Ceramic assemblages during this phase reflect increasing contacts with the western Mogollon region of southeast Arizona and southwest New Mexico, northwest Chihuahua, east-central Arizona, northwest New Mexico, and the northern frontiers of the Jornada Mogollon area. Ceramic types such as Gila Polychrome, Lincoln Black-on-red, Ramos Polychrome, Playas Red, and Seco Corrugated comprise the dominant intrusive wares. The locally produced El Paso Polychrome develops everted rims and completely replaces undecorated brownware during the El Paso phase. It also begins to appear in contexts well beyond the Jornada culture area. The widespread distribution of El Paso Polychrome, along with the array of intrusive ceramic types, a noted increase in imported shell, and evidence of Mesoamerican influences reflected in rock art, indicate that extraregional interaction increased markedly during the El Paso phase.

The ubiquity of corn, along with mounting evidence of beans and squash identified in El Paso phase habitation sites, indicates that the use of cultigens had reached an all-time high. Although agriculture may have provided an important subsistence resource, wild plants continued to play a major dietary role (Bradley, 1983; Moore, 1996).

1.6 Southern Mogollon Tradition in New Mexico (AD 200–1450)

Mogollon culture was first proposed by Gladwin (1934) and first defined by Haury (1936). This tradition marks the rapid development of agricultural communities in the region, with the most prominent trends involving significant population growth and subsequent rapid decline, a shift from pithouse communities to aboveground pueblos, and the appearance of ceramic technology and the proliferation of decorated pottery types.

Several temporal divisions of the Southern Mogollon tradition have been proposed (e.g., Haury, 1936; Wheat, 1955; Bullard, 1962; and Anyon et al., 1981). According to Gilman (1980), the concept of the Mogollon is useful until about AD 1000, when regional variation has increased. She discusses three temporal divisions:

- Early Pithouse period (AD 200-550);
- Late Pithouse period (AD 550-1000); and
- Classic Mimbres period (AD 1000-1150).

This general framework is used for the current project. Furthermore, Haury (1936) proposed three phases that are divisions of the Late Pithouse period: Georgetown, San Francisco, and Three Circle. Generally, Haury's presentation of culture history has withstood the test of time and has been able to incorporate new data. These phases are also used in the culture history that follows.

Early Pit House Period (AD 200–550). Traditionally, it has been proposed that this period marks the initial appearance of fully permanent villages and full-scale agriculture (e.g. LeBlanc, 1980, 1983, 1989:180). Villages of up to 50 pithouses are known for this period, and are typically situated on elevated, defensible locations adjacent to fertile bottomlands. This suggests a pattern of autonomous, village-level polities with a prevailing threat of inter-polity conflict. Utilization of more xeric areas appears to have sharply diminished in

this period. Population estimates for the Mimbres Valley (Blake et al., 1986; LeBlanc, 1989:190) suggest a nearly three-fold demographic increase during this period, from an estimated population of 290 at AD 200 to 830 at AD 550. Pottery appears during this period and consists of undecorated wares classified as Alma Plain Brownware and small amounts of San Francisco Redware.

Late Pit House Period (AD 550–1000). The Late Pit House period is marked by the abandonment of defensive locations on isolated knolls and the establishment of new villages on lower river terraces in the midst of good farmland. There were also changes in ceramics, architecture, and burial practices (LeBlanc, 1977, 1980).

Several phases divide this period, with three successive phases characterizing the period in the vicinity of the project area Georgetown (AD 550-650), San Francisco (AD 650-750), and Three Circle (AD 750-1000).

Georgetown-phase sites are characterized by circular or D-shaped pithouses with a lateral entrance. Pottery includes San Francisco Red, Alma Plain, Alma Neck-banded, and Alma Scored ceramics (LeBlanc, 1980).

The San Francisco phase is characterized by rectangular pithouses with plastered walls, inclined lateral entranceways, and posts in line with the lengthwise axis of the house. Ceremonial houses are also subterranean, but kidney-shaped. Ceramic assemblages include increased frequencies of San Francisco Redware, high frequencies of Alma Plain, and the appearance of the earliest known painted ceramics, including Mogollon Red-on-brown, Three Circle Red-on-white, Mimbres Black-on-white Style I, and San Lorenzo Red-on-brown (LeBlanc, 1980).

The Three Circle phase is named for the Three Circle site at the northern end of the Mimbres Valley and excavated in the 1920s (Bradfield, n.d.). Although pithouses retained a rectangular form, there were changes in ceramics. Pottery assemblages exhibit greater variability than before, with much higher frequencies of Three Circle Black-on-white, San Francisco Redware, Mimbres Black-on-white Style II, Reserve Smudged, and Alma Textured. Mogollon Red-on-white is no longer the dominant pottery type during this phase(LeBlanc, 1980).

Classic Mimbres Period (AD 1000–1150). Three major cultural changes mark this period. First, there was a shift to aboveground, pueblo-style dwellings. This was not entirely a sharp break from the past, as late Three Circle-phase semi-subterranean structures include many examples with cobble walls and three major posts running down the central axis of the room. The shift to aboveground structures in the Classic Mimbres "simply involved the construction of equivalent rooms without placing them in a pit" (LeBlanc, 1989:187). Roomblocks include both habitation and storage rooms, reflecting increasing segregation of functional space. Great kivas were discontinued over the course of this period. Their function may have been taken over by plazas that were loosely defined by surrounding roomblocks.

The second major development is the proliferation of Classic Mimbres painted pottery, which represents the artistic peak of ceramic embellishment for this region, if not the entire Southwest. A brownware, like earlier Mogollon pottery, the style has a white or gray slip. Color on Mimbres pottery was first red on white and later black on white. Leading scholars of

Mimbres ceramics consider the technological and stylistic changes to have developed in-place, rather than being imposed by other groups (Brody, 1977; Cordell, 1997; LeBlanc, 1989).

The third major development relates to continued population growth. Population estimates for the Mimbres Valley suggest an increase from around 3,200 people at AD 1000 to a prehistoric demographic peak of 5,133 at AD 1130. One of the largest villages of this period, Galaz, had a population of roughly 300 persons, which is only slightly higher than the estimated population for the Three Circle-phase component at this site (Anyon and LeBlanc, 1984:187-192). These patterns suggest that population growth was accompanied by community fission and the establishment of many new settlements at this time. Such population levels strained the productivity of available farmland, and depleted other critical resources such as firewood and game. Communities expanded into increasingly marginal areas, whose productive potential was increased by the construction of water-management facilities such as check dams. Fieldhouses were constructed in marginal areas and between major villages in the main river valleys. The formation of larger corporate groups may have facilitated the level of integration necessary for the kinds of regularized communal exchange required for efficient exploitation of diverse localities by a single community.

Black Mountain Phase (AD 1150–1300). Culture history periodization in the region is not clear after the Mimbres phase. As Lekson writes, "Southwestern New Mexico had been the center of Mimbres Mogollon development, but after the Mimbres phase, the area in effect becomes a frontier between archaeological entities defined in adjoining portion of southeastern and west-central New Mexico, northern Chihuahua, and southern Arizona" (Lekson, 1992:86).

From one point of view, the Black Mountain phase followed the collapse of the Classic Mimbres cultural system and is contemporary with the rise and florescence of the large sociopolitical center at Casas Grandes in northern Chihuahua. The regional interaction sphere that developed around Casas Grandes included the Mimbres region. In many ways, the Casas Grandes network paralleled (and may have replaced on a regional scale) the interaction sphere associated with Chaco Canyon, a similar sociopolitical center that was already well into its collapse by the beginning of this period. Casas Grandes far exceeds in scale and complexity all other cultural developments in the prehistory of the Southern Mogollon region. This center probably hosted a population between 2,000 and 3,000 and contains evidence of considerable communal labor in the form of platform mounds, ballcourts, and aqueducts, and was apparently a major center of craft specialization and production. Elite burials are associated with elaborate graves and furnishing, and architectural patterns within the site suggest elite residences as well. Although there is debate surrounding the nature of sociopolitical organization at Casas Grandes, evidence suggests it had been structured as a simultaneous hierarchy, or chiefdom.

Salado (Cliff Phase) (AD 1300–1450). The collapse of the Casas Grandes interaction sphere must have had a profound impact on the Southern Mogollon area. Unfortunately, the archaeological record of developments in the post-Casas Grandes period is far from clear (LeBlanc, 1989:196). What is known about sites of this phase in the Mimbres area suggests close relationships with "Salado" sites in southeastern Arizona. The Salado period is represented in the southwestern New Mexico by what is sometimes called the Cliff phase (LeBlanc and Nelson, 1976; Nelson and LeBlanc, 1986).

Adobe-walled pueblos, usually exhibiting a U- or L-configuration are typical, with an adobe wall closing off the open end of the roomblock and defining a plaza area. There is little or no investment in ceremonial architecture, and architectural patterns suggest not only the continued absence of a sociopolitical elite, but perhaps the disappearance of corporate groups, which were suggested in the Classic Mimbres by the association of a roomblock with a kiva. Also, there is no obvious differentiation between habitation and storage rooms, and rooms within the pueblos show almost no differences between each other. Large settlements containing 100 or more rooms become common in the Southern Mogollon region at this time, although much smaller pueblos and fieldhouses are present as well; however, field houses have not been identified in the archaeological record of the Mimbres Valley.

1.7 Early Agricultural Period In Southeastern and Southcentral Arizona (Formative Stage AD 1-1450)

The Early Agricultural period in southeastern and south-central Arizona provides the basis for the Formative period, traditionally defined by "[t]he presence of agriculture or any other subsistence economy of comparable effectiveness and the successful integration of such an economy into well-established sedentary village life" (Willey and Phillips, 1958:146). Recent research (e.g., Gilman's [1997] work in the San Simon Valley) has shown that the degree of sedentism in Formative populations in the region could be variable. In terms of material culture, the introduction of pottery marks the advent of the Early Formative. Deaver and Ciolek-Torrello (1995) have proposed an Early Formative chronology for the Tucson Basin, based on technological developments in pottery:

Plain Ware Horizon	AD 1-425
Red Ware Horizon	425-650
Early Broadline Horizon	650-700
Snaketown Horizon	700-800

The Plain Ware Horizon "represents the adoption of pottery containers by Late Archaic period populations…in response to increased dependence on maize agriculture and increasing permanence of settlements" (Deaver and Ciolek-Torrello, 1995:513). This horizon is conceived of as a pan-Southwest phenomenon that also "appears to represent the indigenous culture antecedent to those later cultures we recognize as Mogollon, Hohokam, and Anasazi" (Whittlesey et al., 1994:76). Sayles (1945) was able to posit a demonstrable continuum from Cochise culture to the that of the San Simon branch of the Mogollon. Whether Hohokam culture was also an in situ development from the Late Archaic was for years a matter of debate, because of a perceived discontinuity between the San Pedro phase and the initial appearance of Hohokam as a distinctive cultural tradition, a discontinuity that "suggested a unique origin for Formative culture in the Sonoran desert—one based on immigration of technologically advanced populations from Mexico" (Ciolek-Torrello, 1995; see Haury, 1976). The Plain Ware Horizon, identified as the Red Mountain phase in the Phoenix Basin and the Agua Caliente phase in the Tucson Basin, essentially bridges the gap (Cable and Doyel, 1987).

In the San Simon Valley, the San Simon branch was defined by Sayles (1945) as a sequence based on ceramic typology beginning with the Peñasco phase; continuing through the Dos Cabezas, Pinaleño, Galiuro, and Cerros phases and ending with the Encinas phase. The San Simon branch was influenced by surrounding cultural provinces. In the San Simon

Valley, this meant close ties with the Mimbres Mogollon on the east; to the west, in the Sulphur Springs and San Pedro valleys, Hohokam influence was pronounced. Sayles' original sequence has been revised by Franklin (1978) and most recently by Gilman (1997), who has restructured and extended the sequence into five periods:

Early Pit Structure Period	AD 100-650
Middle Pit Structure Period	650-900
Late Pit Structure Period	900-1050
Surface Structure Period	1050-1150
Post-1150 Period	1150-1450

As a result of her investigations in the San Simon Valley, Gilman (1997:84) found that "[d]uring the early Pit Structure period, sites were located where the most reliable water was present, allowing access to the densest wild food and the best farmland. More sites and probably more people were present in the later Pit Structure periods, and sites were additionally located on secondary washes and in areas not previously used for habitation" Gilman (1997:84). To the south, Douglas (1987) has proposed a chronology for the San Simon branch in the San Bernardino Valley consisting of early, intermediate, and late pit house periods dating from 450 to 1150; following sparse occupation of the valley during the early pit house period, survey data suggest an increase in both population and utilization of the valley resources from the end of the intermediate period through the late period. Ceramic assemblages at these sites contain Alma Plain (the common Mogollon plain ware), the San Simon series of painted wares, and Mimbres Black-on-white (Douglas, 1987).

Post-1150 developments in the San Simon Valley are not well known. Gilman (1997) suggests that during the Surface Structure period, as a result of subsistence intensification, populations in the valley began to aggregate in the large settlements along the Gila River in the Safford Valley, with access to permanent water for irrigation; thus, by 1150, "the San Simon seems to have been generally used logistically [i.e., for resource procurement] rather than residentially" (Gilman, 1997:70). In the Safford valley, and in the San Bernardino, Sulphur Springs, and San Pedro valleys, the period from ca. 1150 to 1300 has been associated with Western Pueblo culture. Originally defined by Reed (1948) and modified by Johnson (1965), this complex "developed in the mountainous region of east-central Arizona and west-central New Mexico about AD 1000. It represents a cultural syncretism of Mogollon features, Pueblo traits, and Hohokam elements" (Johnson and Wasley, 1966:249). Key Western Pueblo sites in the area are AZ V:16:8 and 10 (ASM), the Bylas sites, in the Safford Valley (Johnson and Wasley, 1966) and AZ F:3:8 (ASM), the Ringo site, in the Sulphur Springs Valley (Johnson and Wasley, 1966). The period from ca. 1300 to 1450 throughout southern Arizona is associated with the concept of the Salado, discussed below.

Hohokam culture was first defined in the Phoenix Basin, the core area of the culture (Gladwin, 1928; Gladwin and Gladwin, 1934; Gladwin et al., 1937). A Hohokam chronology is given in Table 1. By the mid-Colonial period, the full set of cultural traits had been developed, including public architecture in the form of ballcourts, a large infrastructure of irrigation canals, an extensive trade network with surrounding regions, a mortuary complex based on cremation, and a distinctive material culture of red-on-buff pottery, shell jewelry, and other crafts. The original core-periphery model of the relationship of the Phoenix Basin to the Tucson Basin and other areas (Gladwin and Gladwin 1934; Haury 1976) has been supplanted with the concept of a Hohokam regional system, in which the ballcourts served

as nodes for social and economic interaction (Crown 1991; Doyel 1991; Wilcox, 1979; Wilcox and Sternberg, 1983). During the Colonial period, the Tucson Basin became integrated with the regional system, while maintaining distinct differences from the Phoenix Basin. Populations in the Tucson Basin relied on "a more diversified subsistence base with less emphasis on irrigation" (Foster et al., 2002:26). In terms of material culture, Tucson Basin red-on-brown pottery parallels the Phoenix Basin red-on-buff sequence.

TABLE 1
Hohokam Chronology
(Cable and Doyel 1987; Dean 1991; Deaver and Ciolek-Torrello 1995; Wallace and Craig 1988)

	Period	Phoenix Basin Phases	Tucson Basin Phases
1450			
1400			
1350			
1300		Civano	Tucson
1250			
1200			
1150	Classic	Soho	Tanque Verde
1100			
1050			
1000			
950	Sedentary	Sacaton	Rincon
900			
850		Santa Cruz	Rillito
800			
750	Colonial	Gila Butte	Cañada del Oro
700		Snaketown	Snaketown
650			
600		Sweetwater	
550			
500		Estrella	
450			
400			Tortolita
350			
300		Vahki	
250			
200			
150			

TABLE 1
Hohokam Chronology
(Cable and Doyel 1987; Dean 1991; Deaver and Ciolek-Torrello 1995; Wallace and Craig 1988)

	Period	Phoenix Basin Phases	Tucson Basin Phases
100			
50			
AD 1	Pioneer/Early Formative	Red Mountain	Agua Caliente

The regional system reached its maximum extent during the first half of the Sedentary period. New settlements were established and many existing large villages, such as Snaketown, attained their greatest size and complexity. Evidence suggests that pottery was being mass-produced by specialists (Abbot, 1983). However, the later part of the period saw major changes: the settlement system contracted, populations aggregated along major drainages, and ballcourts were abandoned. By the end of the period, the regional system was collapsing. During the subsequent Classic period, the platform mound replaced the ballcourt as public architecture. Canals in the Phoenix Basin were consolidated, resulting in linear systems of irrigation communities (Doyel, 1980; Howard, 1987), which were "comprised of one or more platform mound villages that served as administrative centers to regulate the allocation of water and organize the construction and maintenance of the canal system" (Waters and Ravesloot, 2001:291). Various reasons, from social to environmental, have been proposed to account for this transformation. Waters and Ravesloot (2001) attribute the changes to a period of channel downcutting and widening on the middle Gila River between 1020 and 1160 that "disrupted nearly a millennium of floodplain stability" (Waters and Ravesloot, 2001:292) and would have required a reconfiguration of the entire canal system. They also note that in the Tucson Basin a similar "dramatic cultural reorganization between 1050 and 1150 is coincident with the cutting of a deep channel into the floodplain of the Santa Cruz River" (Waters and Ravesloot, 2001:295).

Other Classic-period developments included the appearance of adobe architecture and walled compounds, a decline in the production of red-on-buff pottery with a corresponding increase in red ware, and a reorientation of trade and exchange networks. In terms of mortuary customs, cremation had been preferred during the pre-Classic period, although inhumation also occurred during the late pre-Classic. In the Classic period, cremation continued to be practiced, but inhumation became increasingly common. The beginning of the Civano phase in the Phoenix Basin and the Tucson phase in the Tucson Basin, ca. 1300, is associated with the advent what is termed the Salado horizon, defined by the common denominator of Gila Polychrome, the most widely produced and distributed of all ceramic types in the Southwest (Nelson and LeBlanc, 1986; Rice, 1998). The concept of the Salado (the name comes from the Salt River, or Río Salado) was originally developed to explain the changes that occurred during the Classic period; the Salado were presumed to have been a mixed Mogollon-Anasazi population who had migrated into the Tonto Basin, and from there into the Phoenix Basin, "taking with them pueblo traits such as polychrome ceramics, walled compounds, and inhumation burial practices" (Rice, 1998:14).

Subsequently, the concept was broadened to the explain changes perceived in other areas during the Classic period. However, as Nelson and LeBlanc (1986:6) point out, "the concept of Salado has been employed in a most haphazard manner.[T]here is essentially nothing that ties together all of the manifestations that have been labeled Salado, other than the presence of a single pottery type, Gila Polychrome." At the same time, they acknowledge that an inclusive conceptual approach is necessary to understand the "new forms of interaction within and between areas" that appeared in the fourteenth century (Nelson and LeBlanc, 1986:14). As summarized by Rice (1998:15):

The [Salado] horizon reflects a high level of interaction among people in different areas, based possibly in a shared system of beliefs or in similar organizational responses. Given the current archaeological evidence, it is highly unlikely that the horizon resulted from the migration of a group of people across the entire region, and it is not meaningful to talk about the Salado people of the southwestern U.S. Reference to the Salado of a certain area, such as the Tonto Basin, has meaning only if it is taken to refer to the populations that occupied that area during the Salado phase.

Lekson (2000) defines what he calls the Chihuahuan Salado as encompassing that portion of the Chihuahuan desert that covers southeastern Arizona, southern New Mexico, and northwest Chihuahua. Within this larger context, he places the valleys of southeastern Arizona in the "Casa-Casas Corridor" (Lekson, 2000:286) linking Casas Grandes with Hohokam Casa Grande in the middle Gila Valley, in the same fashion that Di Peso (1974) had attempted to link Casas Grandes with Chaco (which proved mistaken when Dean's and Ravesloot's [1993] revised dates indicated that the rise of Casas Grandes postdated Chaco's collapse). The Casa-Casas Corridor revives a concept suggested previously by Wilcox and Sternberg (1983:255):

The Salado phenomenon that crystallized about 1300 is interpreted as the wide-spread adoption of a new ideology that temporarily facilitated the economic articulation of a series of small-scale regional systems from the Phoenix Basin Hohokam on the west to Casas Grandes on the southeast.

The ideology is still being explored; Crown (1994) has emphasized this aspect of the Salado phenomenon, regarding Gila Polychrome as the manifestation of a program of cultic significance. This program or ideology, however defined, appears to have come to an end in the mid-fifteenth century, when throughout southern Arizona the archaeological record itself comes to an end, indicating a massive region-wide depopulation. Recent research by the Center for Desert Archaeology (CDA) suggests that populations did not abandon the region en masse at 1450. Demographic decline was considerably more complex and involved many of the processes associated with coalescence, including migration and aggregation. After more than a century of gradual decline, the final abandonment of the valley circa 1450 was by a population comprised of descendants of both local and migrant groups [CDA 2004:15]

1.8 Protohistoric Period (AD 1450–1659) New Mexico and Texas

The Protohistoric period begins with the pueblo demise and ends with Spanish colonization of the region. The local area was inhabited by aboriginal people during this time, but because these groups were largely hunter-gatherers, archaeological evidence of their

activities remains largely obscure. Because it has limited pertinence to the sites discussed in this report, the Protohistoric period will be introduced in a cursory manner, and the interested reader is referred to Baugh and Sechrist (2001).

Several cultural groups may have been present in the study area when Spanish expeditions first passed through the project area. The Spanish explorers reported groups identified as Suma, Manso, Jumano, and Apache. Chinarra, Concho, Jano, Jocome, Piro, and Tarahumara may also have also occasionally occupied the area (Beckett and Corbett, 1992). A great deal of confusion surrounds the names of groups encountered by the Spanish, but it is generally agreed that the Manso occupied the area around El Paso. The Manso may have been direct descendents of the prehistoric inhabitants of the area, without the trappings of pueblo society (Lukowski and Stuart, 1996). They lived along the Rio Grande in grass or brush huts and relied heavily on fish for sustenance, but limited horticulture may also have been practiced (Camilli et al., 1988). The Manso welcomed the Spanish and eventually, most were persuaded to occupy missions near El Paso. The Pueblo Revolt of 1680 brought native refugee groups from the northern pueblos into the local missions, and the Manso disappeared as a cultural group after a few generations of intermarriage (Beckett and Corbett, 1992).

Among the Protohistoric period groups observed in the area by early explorers and missionaries, the Mescalero Apache were the only documented inhabitants who succeeded in resisting Spanish subjugation. Ethnographic and archival data suggest the Athapaskan ancestors of the present-day Mescalero Apache arrived in the local area during the 1500s (Schroeder, 1973).

Early Spanish records describe bison-hunting native peoples in 1540 (Schroeder, 1973). The Chamuscado-Rodriguez (1581) and Espejo (1583) expeditions reported an unnamed group of nomads, probably Apache, in or near the San Andres or Oscuro mountains west of the Tularosa Basin. By the 1630s, the southern groups in the Jornada region were referred to as *Apaches de Perillo* (Schroeder, 1973: 127). The local Apache were nomadic hunters and gatherers whose territory ranged from southern New Mexico and west Texas, south into Mexico. After the mid-1700s, the Spaniards referred to this group as the *Mescalero* (people of the mescal) because they gathered and roasted the crowns of agave (mescal). In addition to hunting and gathering, the Apache relied on raiding and trade with the pueblos as supplementary means of subsistence. Travelers along El Camino Real de Tierra Adentro (the Camino Real) and residents of the Spanish villages along the Rio Grande were frequent targets. As a result, Spanish expeditions and the establishment of missions around El Paso were confined to areas along the Rio Grande. Due to Apache activity there, the Tularosa Basin and Hueco Bolson receive little mention in Spanish records. For almost 200 years, "from 1610 to 1821, in spite of the Spanish presence, the white sands country remained an Apache domain" (Schneider-Hector, 1993: 32).

1.9 Protohistoric Period (AD 1450-1700) Southern Arizona

The so-called Protohistoric period in southern Arizona has been defined in various ways (Gilpin and Phillips, 1998). The time frame most commonly used is from ca. 1450 to 1700. As Ravesloot and Whittlesey (1987) point out, this is not what "protohistoric" means: "By definition, it must postdate the arrival of Europeans in the New World [and] must also end at the time of continuous occupation by or continuous contact with Europeans….Thus, the end date of the Protohistoric is fluid and will not be the same in all areas" (Ravesloot and

Whittlesey, 1987:83). For southern Arizona, they prefer to define the period as beginning with the first formal Spanish entrada–Coronado's expedition of 1540-1542–and ending with the establishment of the presidio at Tubac in 1752. The fact remains that discussions of this transitional period generally begin at the end of the seventeenth century, when the Jesuit Order undertook the conversion of the northern reaches of Pimería Alta (Land of the Upper Pima), as this portion of New Spain was called.

The inhabitants of this territory were the O'odham; their language, Piman, is one of the Sonoran languages within the Uto-Aztecan family (Miller, 1983). The O'odham consisted of the Sobaipuri, living on the middle Santa Cruz and San Pedro; the Tohono O'odham, west of the Santa Cruz; the Hia C'ed O'odham, farther to the west; the Kohatk, on the lower Santa Cruz, and the Akimel O'odham, along the middle Gila (Erickson, 1994). The Sobaipuri, the Kohatk, and the Akimel O'odham were known as One Villagers, living in ranchería-type settlements along the rivers and relying on agriculture for a significant portion of their subsistence; the Sobaipuri at Bac were irrigating with canals when the Spanish arrived (Fontana, 1983). The Tohono O'odham were known as Two Villagers, moving seasonally between their winter well villages in the foothills and summer field villages in the valleys, where they practiced alluvial fan floodwater farming (Foster et al., 2002). The Hia C'ed O'odham, mobile hunters and gatherers, were known as No Villagers (Erickson, 1994).

East and northeast of O'odham lands was the territory of Athapaskan groups that had entered the Southwest from the north sometime in the sixteenth century. Southeastern Arizona is considered the homeland of the Central band of the Chiricahua Apache; to the north were the Western Apache (Basso, 1983; Opler, 1983). These groups utilized different environmental zones by employing hunting and gathering strategies that allowed them to exploit large areas containing varied resources (Lekson, 1985). The mobility of the Apache tribes was also instrumental in allowing them to effectively control much of their range throughout the Spanish Viceregal and Mexican Republic periods and well into the U.S. Territorial period. The Apache regarded all settlements(O'odham, Spanish, Mexican, or Anglo)as resources to be exploited by periodic raiding (Basso, 1983).

1.10 Historic Period (AD 1659–present) Texas and New Mexico

In late 1597, Juan de Oñate led soldiers and colonists north from Mexico. In April they reached the San Elizario area at the eastern end of the El Paso Valley. The expedition rested there for a week, caught many fish, and hunted ducks and geese. By the end of the month, Oñate claimed for Spain the entire region drained by the Rio Grande.

After the colonization and partial Christianization of the El Paso/Juárez area, Spanish caravans used the Camino Real (the "royal road" linking Mexico City with northern New Mexico) to transport needed supplies to Spanish settlements in New Mexico. In 1659, the Christianized Indians built an adobe church for the mission of Nuestra Señora del Guadalupe de Los Mansos del Paso del Norte. By 1662, a larger and more permanent church with the same name was dedicated and is still in use in Juárez, Chihuahua, Mexico (Lockhart, 1995). The community that developed around the mission became known as El Paso del Norte and would later be changed to Ciudad Juárez (Simmons, 1991; Sonnichsen, 1968; Timmons, 1990). By 1680, El Paso del Norte, or Ciudad Juárez, included many acres of cultivated land, 13,000 sheep and goats, and 9,000 head of cattle (Sonnichsen, 1968).

As Spanish rule became more demanding of the Indian population, resentment and mistrust of all that was Spanish increased. Tensions mounted and on August 10, 1680, the northern Pueblo Indians revolted against the Spaniards. The Spaniards headed south towards El Paso del Norte. Upon their arrival in the El Paso area, Spanish Governor Otermín determined that maintaining a base of operations in Paso del Norte was favorable for the reconquest of the Pueblo Indians and prevention of further uprisings.

In February of 1682, Otermín founded three pueblos for the Piro and Tiwa, who had fled with the Spanish during the Pueblo Revolt (Hughes, 1914). These pueblos were Senecú, Socorro, and Isleta del Sur. By 1684, severe drought had greatly affected both Spanish and Indian communities and the Indian community revolted, but by 1685, Spanish control over Paso del Norte was regained (Forbes, 1960; Hughes, 1914). Control over the New Mexico territory was not regained until 1692 (Timmons, 1990: 22).

In New Mexico, silver and copper was discovered. Copper was found in the Santa Rita area of southwestern New Mexico in the 1770s, when the Sierra de Cobre were named, although Native Americans no doubt knew of the deposits before. Spanish miners used convict labor to extract ore, which was shipped to Ciudad Chihuahua along the "Copper Trail' along Santa Rita Creek to the present location of Fort Bayard. The mine operated from the 1790s to about 1820, but subsequent mining operations have obliterated remains of early mining activity (Pratt and Scurlock, 1991). Descriptions of Spanish mining methods are found in Bartlett (1856), in his 1851 report on landscapes along the boundary.

By 1700, population levels among the Spanish and Indian communities had decreased. Entire settlements were abandoned, and by the mid-1700s, Apache raids increased in the Paso del Norte area (Adams and Chavez, 1956). The Spaniards increased the number of soldiers, and the first San Elceario presidio was established from 1774 to 1780 (Porter, 1973: 41). It was located across the Rio Grande from Fort Hancock (Peterson and Brown, 1994: 90). The struggling communities persevered, and by the nineteenth century, population and trade had increased (Baxter, 1987; Thornton, 1987; Timmons, 1990). The second Presidio de San Elceario was later renamed San Elizario and relocated to its present site in 1789 (Porter, 1973: 29, 40).

Mexico declared its independence from Spain in 1821, but very little changed with regard to governmental, legal, and social systems—Spanish influence prevailed. This proved to have both positive and negative consequences, not only for the Paso del Norte region, but also for all of Mexico and its territories.

In 1836, Texas claimed its independence from Mexico but did not include Paso del Norte or New Mexico until the Texan invasion of New Mexico in 1841. Texas claimed all territory north of the Rio Grande, including its mouth and headwaters. Mexico refused to accept the proposed boundary.

By 1846, the Polk administration was determined to expand American territory, and in May of that year, the United States declared war against Mexico. The United States claimed the Rio Grande as its border, but Mexico claimed the Pecos River as the official border. In December of 1846, the United States military invaded Mexican territory by entering El Paso Del Norte, or Juárez, Chihuahua, Mexico (Timmons, 1990).

After the defeat of Mexico in 1848, both governments signed the controversial Treaty of Guadalupe Hidalgo. The treaty stated that Mexico would retain everything south of the Rio Grande (Meyer and Sherman, 1995). With the Gadsden Purchase of 1853, the United States acquired the Mesilla Valley (today southern New Mexico and Arizona) and further established the present boundary as the official U.S.-Mexico International Border.

The El Paso, Texas, area began as a mining district in 1847. Silver and copper mines in the Organ Mountains brought in miners, and prospectors used the community as a base station. In southwestern New Mexico, mining became a major industry. Among the silver mining locations were along the Mimbres River, in the Pyramid Mountains, Hillsborough, and the Peloncillo Mountains. Copper was mined at the Santa Rita and Hanover mines. Gold was found and mined at Pinos Altos, the Mogollon Mountains, and the Black Range. Turquoise and copper came from the Burro Mountains (Pratt and Scurlock, 1991). In the Organ Mountains, in 1849, Hugh Stevenson discovered silver. This mine was worked for a about a decade and was sold to Army officers from Fort Fillmore in 1858.

Mail service from established cities such as San Antonio and Santa Fe via El Paso began in 1851 and further pushed the development towards becoming a permanent community. By 1858, mail service from San Antonio to San Diego (now the Butterfield Overland Mail) by way of El Paso further increased the need for an established community. Surveyors platted a new townsite and named it El Paso as more and more U.S. citizens settled the area. By 1860, the newly recognized El Paso, Texas, boasted 428 residents. Across the border in El Paso del Norte, Chihuahua, residents numbered well over 4,000 (Metz, 1988).

Small trading posts, some that grew up to be established towns were found at various locations along the route. One of these locations that are located near this project's right of way is Doubtful Canyon. Doubtful Canyon served as a trading post until the Butterfield Stage ceased business. When the Butterfield Stage was abandoned so was the trading post, until the area was re-established as the town of Steins when the Southern Pacific Railroad was constructed through the canyon in1877.

Before the Civil War, the most likely transcontinental railroad route appeared to be a southern one. Indeed, the acquisition of the Gadsden Purchase was primarily for potential railroad construction. With the victory of the Union in the Civil War, a northern transcontinental route was favored, and the route crossing western Texas had to wait (Leonard, 1981; Reed, 1941). Two railroads were involved in the construction of a rail lines in the southern Southwest. The Southern Pacific and the Texas Pacific were the primary players in an east-west route.

By 1870, the Southern Pacific was consolidated with other lines established by the Central Pacific, basically to protect a transportation monopoly to California. Building eastward from Los Angeles, the Southern Pacific began service in Arizona in 1877 (Walter and Bufkin, 1986). Construction reached Lordsburg on October 18, 1880, and Deming on December 15, 1880.

Meanwhile, the Atchison, Topeka and Santa Fe Railway (ATSF), which had reached the middle Rio Grande Valley in 1880 from Colorado via Raton Pass, built a line south. Nicknamed the Horny Toad Line, this route reached Rincon in 1881. From here tracks were laid to the Black Range and on to Deming (Wilson et al., 1989).

In Deming, the Southern Pacific met the tracks of the ATSF, which were laid by early March of 1881 (Myrick, 1970). Once the Southern Pacific rails were joined with those of the Santa Fe, the nation's second transcontinental rail line had been completed. The route that the Southern Pacific followed provided the easiest crossing of the continental divide; indeed, the advantages of this route were the justification for the Gadsden Purchase, which included this land.

Work continued on the tracks to Texas, and the first train reached El Paso on May 19, 1881. Despite having no authority to build a railroad in Texas, Huntington and his associates did just that. Doing business as the Galveston, Harrisburg and San Antonio Railway, the Southern Pacific interests laid track further east. Meanwhile, another railroad was pushing west towards El Paso.

Railroad stations were basically designated location along the lines to serve the handling of passengers, freight, and other commodities. While the larger towns also had water tanks, switching yards, depots, possibly even turntables, the smaller stations consisted basically of a simple earthen ramp to aid in loading the train cars. In Doña Ana County such a station was established near this project's right of way at Doña. Within Luna County, small stations were established at (east to west) Myndus, Carne, Luxor, Gage, Tunis, Mongola, and Quincy. Within Grant County, small stations were established at Ladim, Separ, and Hawkings, while in Hidalgo County they were established at Lisbon and Ulmarius. All of these stations were established during the initial construction of the Southern Pacific Railroad line. The station at Separ was initially a construction camp for the railroad and is located where the eastern portion and western portion of the Southern Pacific Railroad linked up (Pearce, 1965).

Along the rails, several of larger stations were established in order to directly support the railroad rolling stock and to serve the public. These stations usually consisted of a depot, a siding to switch the trains on and off the main rail, water tanks, sand towers, and other support structures. Depots, used to accommodate passengers and store freight, and ranged from simple wooden lean-tos to elaborately constructed stone structures. Quite commonly around these larger stations and support structures grew small towns. These towns were established to reap the benefits of close transportation for both passengers and commodities. Quite often these were company towns used to house the railroad workers. Within the vicinity of the project right of way there are three towns that were established as these larger stations, two still in existence.

The town of Cambray was founded in eastern Luna County along the rail line as a station with a water tower, when a well was drilled there in 1893 (Pearce, 1965). The area was abandoned by the railroad in 1953, when more efficient water-using engines were introduced, eliminating the need for the number of water stops.

The City of Deming, which serves as the County Seat of Luna County was established in1880. The area grew due to the abundance of irrigated agriculture in the area. Deming was a major station along both the Southern Pacific and the AT&SF lines (Pearce, 1965) and continues to be so in the modern era.

The City of Lordburg, which serves as the County Seat of Hidalgo County was established in 1880, when the small mining town of Shakespeare was missed by the railroad. In order to

maintain the living town, a portion of the town of Shakespeare was moved to the tracks and became known as Lordsburg (Pearce, 1965). Lordsburg continues to be a major station for the Southern Pacific Railroad.

Steins was established in 1880 as a station for the Southern Pacific Railroad. This is the same area that was known as Doubtful Canyon when it was used as a Butterfield Stage Station in the 1860s. The town is named for Captain Enoch Steen of the United States Calvary, who was killed by Apaches. Mining in the area of the town consisted primarily of gravel to create the roadbed for the railroad. The town was abandoned in 1945 (Pearce, 1965).

Shakespeare was originally established on the alternate route of the Butterfield Stage. The national Mail and Transportation Company established a stage stop here, calling the town Grant (Pearce, 1965). The town was renamed Ralston after a mining investor, when gold was discovered in the nearby Pyramid Mountains (Jenkins and Schroeder 1974). Finally the name of the town was changed to Shakespeare. The town was bypassed by the railroad. The post office was closed in 1885 (Pearce, 1965).

Valedon, which is located immediately to the west of Shakespeare, had its beginning in 1885 with the discovery of gold, silver and copper ores. The property in time passed through the hands of several owners and in 1913 the Eighty-Five Mining Company acquired the property, sank a shaft and the town began to grow. By 1926, the town had a population of two thousand residents, a theater, several boardinghouses, various stores and a two-room school. Phelps Dodge Company bought the property in 1931 and a year later discontinued operations (Pearce, 1965).

Cattle ranching in the Southwest was an expansion of the Anglo-Texan ranching system. This system of practices developed on the coastal prairies of southwestern Louisiana from influences deriving from the Carolinas and from Tamaulipas, Mexico. Its main features included allowing cattle to feed themselves year-round in stationary pastures on a free range, without additional feeding or protection. With sufficient grass, it is not necessary to fatten cattle for market (Wilson et al., 1989).

Several factors favored the development of the cattle industry in the late nineteenth century:

- The invention of deep well drilling equipment gave ranchers access to water.
- Railroads provided access from remote areas to markets.
- Production of barbed wire (c. 1873) allowed vast areas to be fenced.
- There was also an influx of new capital from foreign and domestic sources to finance ranching (Wilson et al., 1989).

1.11 Historic Period (AD 1700–present) Southern Arizona

In 1701, the first missions in what is now Arizona were established on the Santa Cruz at the Sobaipuri settlements of Bac and Guevavi (Officer, 1987). Over the following decades the area was incorporated into a system of cabaceras (head missions) and dependent visitas, similar to that established by the Franciscans in New Mexico. Following the expulsion of the Jesuits in 1767 by the Spanish Crown, the Franciscans assumed responsibility for the mission program in Pimería Alta. By the 1760s, the military cordón, or line of presidios, defending northern New Spain included garrisons at Tubac on the Santa Cruz and at Terrenate, at the headwaters of the San Pedro. In 1775, in order to provide more effective

protection against Apache raids, the cordón was realigned and the presidial garrisons of Tubac, Terrenate, and Fronteras were moved to new sites located farther north: San Agustín del Tucsón (within the present city of Tucson), Santa Cruz de Terrenate (on the San Pedro south of the present town of Benson), and San Bernardino (in the San Bernardino Valley south of the present border) (Officer, 1987). Up to 1776, southern Arizona constituted part of the province of Sonora, within the Viceroyalty of New Spain; after jurisdictional reorganization in that year, Sonora was included in a separate administrative unit of frontier provinces.

By the 1770s, the San Pedro Sobaipuri, who had formed a first line of defense against Apache attacks, had abandoned their settlements. Some joined the Akimel O'odham, but most moved to Bac, where they were eventually absorbed into the increasing Tohono O'odham population (Fontana, 1983). For the Akimel O'odham, "the acquisition of wheat from the Spaniards was the most significant development" during this period (Ezell, 1955:173). Two crops, one of wheat and one maize, could be grown each year; by the 1770s, wheat was being grown at all the villages along the middle Gila (Sheridan, 1988). Around this time, the Akimel O'odham were joined on the middle Gila by the Pee Posh, an "amalgam of Yuman subgroups" who had migrated from the lower Gila River and lower Colorado River area (Harwell and Kelly, 1983).

In 1787, Spanish authorities instituted a policy of offering inducements (primarily, rations of beef, corn, sugar, and tobacco) for Apache bands to sue for peace. The strategy proved relatively successful and was continued in the early years of the Mexican Republic, after the achievement of independence in 1821. During this time when the frontier was free from the constant threat of Apache raids, a number of land grants were applied for and approved.. Those in southeastern Arizona consisted of San Juán de las Boquillas and San Rafael del Valle, on the San Pedro, and San Bernardino, the headquarters of which was located at the former presidio (Gerald, 1968; Wagoner, 1975). All of these grants were large cattle ranching operations (Officer, 1987).

The Apache resumed raiding in the late 1820s, but such incidents were sporadic until 1831, when the insolvency of the government in Mexico City forced it to curtail the Apache rationing program (Officer, 1987; Sheridan, 1995). From 1831, the Hispanic frontier was the scene of constant conflict with the Apache, who were now obtaining arms from Anglo-American traders (paid for with stolen Mexican livestock) (Officer, 1987). Settlements along the Santa Cruz survived, but to the east the fortified ranchos of the San Bernardino grant and those along the San Pedro had to be abandoned. Major Apache routes for raids into Sonora and Chihuahua ran through the San Simon, San Bernardino, and San Pedro valleys (Stevens, 1963).

In 1846 the United States invaded Mexico; two years later, Mexico was forced to cede much of its land to the United States by the Treaty of Guadalupe Hidalgo. Most of southern Arizona below the Gila River remained Mexican territory until the United States acquired this territory by the Treaty of La Mesilla, ratified in 1854. Southern Arizona became part of Doña Ana County, New Mexico Territory. In 1857, the region was linked to the rest of the country by the San Antonio and San Diego Mail Line; the route was taken over the following year by the Butterfield Overland Mail. The route passed through Akimel O'odham and Pee Posh lands, with stage stops at Sacaton, Casa Blanca, and Maricopa Wells,

where the Akimel O'odham supplied the stage company with surplus wheat (Ormsby, 1955; Sheridan 1988).

At the outbreak of the Civil War in 1861, federal troops were evacuated from the few posts that had been established in southern Arizona, leaving the region unprotected from Apache raids and Confederate invasion. The following year, the California Volunteers reestablished the U.S. presence and in 1863, the Territory of Arizona was created. These years are considered the beginning of the Anglo period in southern Arizona. As Ayres (1984) has pointed out in reference to the Tucson Basin, this is a political designation that does not reflect ethnic reality; the Hispanic population was the majority in much of the region until the early twentieth century.

Early Territorial Tucson was a bilingual, integrated community and was the primary regional distribution center serving the mining and ranching industries. Freight and stage companies were major businesses (Sheridan, 1986; Walker, 1973). The Butterfield Overland Mail route, which had been discontinued in 1861, was taken over by other companies. By the 1870s, places like Maricopa Wells serviced wagon trains and at least two stages on a daily basis. This frontier economy and society came to an end with the arrival of the Southern Pacific Railroad, which reached Tucson in 1880 and continued east to form a transatlantic link by connecting with the Atchison, Topeka and Santa Fe Railroad (Myrick, 1975). The railroad transformed the region economically, providing miners and ranchers access to markets and bringing in a flood of consumer goods. Socially, it also initiated the wholesale transplantation of Anglo culture.

With increasing demand for land and water, the O'odham were at a distinct disadvantage. By the late 1860s, the Akimel O'odham were "selling or trading several million pounds of wheat a year [and] Piman wheat fields served as the breadbasket of the newly created Arizona territory" (Sheridan, 1988:159). The federal government had established the initial Gila River Indian Reservation in 1859, but failed to recognize their water rights. By 1870, Anglo farmers upstream were diverting the waters of the Gila River. The situation was exacerbated by channel downcutting and widening (Waters and Ravesloot, 2001:293). In a short time, the Akimel O'odham had lost most of their water and their livelihood; the next forty years would be known as the "years of famine" (Ezell, 1983:158-159). Some of the Akimel O'odham and Pee Posh moved to the Salt River, where the Salt River Indian Reservation was established in 1879.

The federal government increased the Gila River Indian Reservation in 1882 and 1883 to most of its present extent, but continued to take no action to protect water rights. In 1887, the dam constructed across the Gila River at Florence cut off all water downstream (Sheridan, 1995). With their subsistence base lost, the Akimel O'odham hired out as field hands in Anglo cotton fields; another source of income was firewood, which resulted in cutting the extensive mesquite bosques along the river. Conditions improved after the first decade of the twentieth century, but federal undertakings like the San Carlos Project had mixed results (Sheridan, 1995). Following the Indian Reorganization Act of 1934, the Akimel O'odham and Pee Posh formally established the GRIC in 1939. The vision of the Pima-Maricopa Irrigation Project now in progress is to restore the livelihood that was lost in the 1870s.

The Tohono O'odham also worked in the Anglo cotton fields. Their claim to a portion of the Tucson Basin was recognized in 1874 by the creation of the San Xavier Reservation,

although this represented only a fraction of their homeland. The Sells Reservation was established in 1916, but much of this was revoked the following year at the insistence of Anglo ranchers. The reservation did not achieve its present extent until 1937, when the Tohono O'odham Nation (TON) was constituted. The Ak-Chin Community, between the GRIC and the TON, consists of Tohono O'odham. This Community, which is a separate entity from the TON, was established as the Maricopa Reservation in 1912. In 1962, the Ak-Chin Community Farms Enterprise was established and in 1988 the Community won a protracted battle with the federal government over water rights.

In southeastern Arizona Territory, the Chiricahua Apache fought a losing battle against the U.S. Army that ended with their surrender in 1886, after which they were exiled to Florida (Opler, 1983). As the hostilities drew to a close, ranchers and later farmers began moving into the area. Cochise County was formed from the eastern portion of Pima County in 1881. The 1880s were boom years for the cattle industry, one of the largest outfits being the San Simon Cattle Company in the San Simon Valley. As noted previously, the 1890s witnessed the results of overstocking combined with a major drought; as Sheridan (1995:141) notes, "[i]t was a disaster of biblical proportions, one in which nature and greed conspired to magnify their individual effects. Cattle died like flies all over the territory, but the losses were greatest in southern Arizona, where 50 to 75 percent of all animals perished." Cattle ranching recovered, but on a considerably reduced scale. In the 1920s, farmers began settling in the San Simon Valley, taking advantage of its artesian wells. At the same time, agricultural development began in the Santa Cruz Flats. Besides O'odham, the cotton farmers there relied on Mexicans and, in the 1930s, Anglos fleeing the dustbowl.

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